```
<110> Ipsen, Hans Henrick
      Spangfort, Michael Dho
      Larsen Jorgen Nedergaard

<120> NOVEL RECOMBINANT ALLERGENS


<130> 04305/100E144-US2

<150> 09/270,910
<151> 1999-03-16

<150> 60/078,371
<151> 1998-03-18

<160> 40

<170> FastSEQ for Windows Version 3.0

<210> 1
<211> 41
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 1
aattatgaga ctgagaccac ctctgttatc ccagcagctc g      41


<210> 2
<211> 41
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 2
ttaatactct gactctggtg gagacaatag ggtcgtcgag c      41


<210> 3
<211> 23
<212> DNA
<213> Artificial Sequence
<223> primer

<400> 3
tgagacccccc tctgttatcc cag      23


<210> 4
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> primer
```

<400> 4
atactctgac tctgggggag aca   23

        <210> 5
        <211> 15
        <212> DNA
        <213> Artificial Sequence

        <220>
        <223> primer

        <400> 5
gttgccaacg atcag   15

        <210> 6
        <211> 23
        <212> DNA
        <213> Artificial Sequence

        <220>
        <223> primer

        <400> 6
tgagaccccc tctgttatcc cag   23

        <210> 7
        <211> 23
        <212> DNA
        <213> Artificial Sequence

        <220>
        <223> primer

        <400> 7
acagaggggg tctcagtctc ata   23

        <210> 8
        <211> 31
        <212> DNA
        <213> Artificial Sequence

        <220>
        <223> primer

        <400> 8
gataccctct ttccacaggt tgcaccccaa g   31

        <210> 9
        <211> 31
        <212> DNA
        <213> Artificial Sequence

        <220>
        <223> primer

        <400> 9
acctgtggaa agagggtatc gccatcaagg a   31

```
<210> 10
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 10
aacatttcag gaaatggagg gcc      23


<210> 11
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 11
tttcctgaaa tgttttcaac act      23


<210> 12
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 12
ttaagaacat cagctttccc gaa      23


<210> 13
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 13
agctgatgtt cttaatggtt cca      23


<210> 14
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 14
ggaccatgca aacttcaaat aca      23


<210> 15
<211> 23
<212> DNA
<213> Artificial Sequence
```

<220>
<223> primer

<400> 15
agtttgcatg gtccacctca tca   23

<210> 16
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 16
tttccctcag gcctcccttt caa   23

<210> 17
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 17
aggcctgagg gaaagctgat ctt   23

<210> 18
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 18
tgaaggatct ggagggcctg gaac   24

<210> 19
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 19
ccctccagat ccttcaatgt tttc   24

<210> 20
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 20
ggcaactggt gatggaggat ccat   24

        <210> 21
        <211> 24
        <212> DNA
        <213> Artificial Sequence

        <220>
        <223> primer

        <400> 21
ccatcaccag ttgccactat cttt   24

        <210> 22
        <211> 15
        <212> DNA
        <213> Artificial Sequence

        <220>
        <223> primer

        <400> 22
catgccatcc gtaag   15

        <210> 23
        <211> 41
        <212> DNA
        <213> Artificial Sequence

        <220>
        <223> primer

        <400> 23
accacagcct ccagcgaaga atatgaaaaa tttggtatgg a   41

        <210> 24
        <211> 41
        <212> DNA
        <213> Artificial Sequence

        <220>
        <223> primer

        <400> 24
tggtgtcgga ggtcgcttct tatacttttt aaaccatacc t   41

        <210> 25
        <211> 21
        <212> DNA
        <213> Artificial Sequence

        <220>
        <223> primer

        <400> 25
ccagcggcta atatgaaaaa t   21

<210> 26
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 26
gtcggaggtc gccgattata c   21

<210> 27
<211> 41
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 27
ggctaatcaa tgtcaatatg gtcacgatac ttgcagggat g   41

<210> 28
<211> 41
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 28
ccgattagtt acagttatac cagtgctatg aacgtcccta c   41

<210> 29
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 29
tgtcaagctg gtcacgatac t   21

<210> 30
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 30
ttagttacag ttcgaccagt g   21

<210> 31
<211> 21
<212> DNA
<213> Artificial Sequence

6

<220>
<223> primer

<400> 31
ccagcggcta atatgaaaaa t   21

<210> 32
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 32
catattagcc gctggaggct g   21

<210> 33
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 33
tgtcaagctg gtcacgatac t   21

<210> 34
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 34
gtgaccagct tgacattgat t   21

<210> 35
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 35
attcatcagc tgcgagatag g   21

<210> 36
<211> 480
<212> DNA
<213> betula verrucosa

<400> 36
ggtgtgttta attatgagac tgagaccacc tctgttatcc cagcagctcg actgttcaag   60
gcctttatcc ttgatggcga taacctcttt ccaaaggttg cacccccaagc cattagcagt   120

7

```
gttgaaaaca ttgaaggaaa tggagggcct ggaaccatta agaagatcag ctttcccgaa    180
ggcctccctt tcaagtacgt gaaggacaga gttgatgagg tggaccacac aaacttcaaa    240
tacaattaca gcgtgatcga gggcggtccc ataggcgaca cattggagaa gatctccaac    300
gagataaaga tagtggcaac ccctgatgga ggatccatct tgaagatcag caacaagtac    360
cacaccaaag gtgaccatga ggtgaaggca gagcaggtta aggcaagtaa agaaatgggc    420
gagacacttt tgagggccgt tgagagctac ctcttggcac actccgatgc ctacaactaa    480
```

<210> 37
<211> 159
<212> PRT
<213> betula verrucosa

<400> 37
```
Gly Val Phe Asn Tyr Glu Thr Glu Thr Thr Ser Val Ile Pro Ala Ala
1               5                   10                  15
Arg Leu Phe Lys Ala Phe Ile Leu Asp Gly Asp Asn Leu Phe Pro Lys
            20                  25                  30
Val Ala Pro Gln Ala Ile Ser Ser Val Glu Asn Ile Glu Gly Asn Gly
            35                  40                  45
Gly Pro Gly Thr Ile Lys Lys Ile Ser Phe Pro Glu Gly Leu Pro Phe
        50                  55                  60
Lys Tyr Val Lys Asp Arg Val Asp Glu Val Asp His Thr Asn Phe Lys
65                  70                  75                  80
Tyr Asn Tyr Ser Val Ile Glu Gly Gly Pro Ile Gly Asp Thr Leu Glu
                85                  90                  95
Lys Ile Ser Asn Glu Ile Lys Ile Val Ala Thr Pro Asp Gly Gly Ser
            100                 105                 110
Ile Leu Lys Ile Ser Asn Lys Tyr His Thr Lys Gly Asp His Glu Val
        115                 120                 125
Lys Ala Glu Gln Val Lys Ala Ser Lys Glu Met Gly Glu Thr Leu Leu
    130                 135                 140
Arg Ala Val Glu Ser Tyr Leu Leu Ala His Ser Asp Ala Tyr Asn
145                 150                 155
```

<210> 38
<211> 615
<212> DNA
<213> vespula vulgaris

<400> 38
```
aacaattatt gtaaaataaa atgtttgaaa ggaggtgtcc atactgcctg caaatatgga     60
agtcttaaac cgaattgcgg taataaggta gtggtatcct atggtctaac gaaacaagag    120
aaacaagaca tcttaaagga gcacaatgac tttagacaaa aaattgcacg aggattggag    180
actagaggta atcctggacc acagcctcca gcgaagaata tgaaaaattt ggtatggaac    240
gacgagttag cttatgtcgc ccaagtgtgg gctaatcaat gtcaatatgg tcacgatact    300
tgcagggatg tagcaaaata tcaggttgga caaaacgtag ccttaacagg tagcacggct    360
gctaaatacg atgatccagt taaactagtt aaaatgtggg aagatgaagt gaaagattat    420
aatcctaaga aaaagttttc gggaaacgac tttctgaaaa ccggccatta cactcaaatg    480
gtttgggcta acaccaagga agttggttgt ggaagtataa aatacattca agagaaatgg    540
cacaaacatt accttgtatg taattatgga cccagcggaa actttaagaa tgaggaactt    600
tatcaaacaa agtaa                                                     615
```

<210> 39
<211> 204
<212> PRT
<213> vespula vulgaris

<400> 39
```
Asn Asn Tyr Cys Lys Ile Lys Cys Leu Lys Gly Gly Val His Thr Ala
1               5                   10                  15
Cys Lys Tyr Gly Ser Leu Lys Pro Asn Cys Gly Asn Lys Val Val Val
```
8

```
                  20                      25                      30
Ser Tyr Gly Leu Thr Lys Gln Glu Lys Gln Asp Ile Leu Lys Glu His
            35                      40                      45
Asn Asp Phe Arg Gln Lys Ile Ala Arg Gly Leu Glu Thr Arg Gly Asn
        50                      55                      60
Pro Gly Pro Gln Pro Pro Ala Lys Asn Met Lys Asn Leu Val Trp Asn
    65                      70                      75                      80
Asp Glu Leu Ala Tyr Val Ala Gln Val Trp Ala Asn Gln Cys Gln Tyr
                85                      90                      95
Gly His Asp Thr Cys Arg Asp Val Ala Lys Tyr Gln Val Gly Gln Asn
            100                     105                     110
Val Ala Leu Thr Gly Ser Thr Ala Ala Lys Tyr Asp Asp Pro Val Lys
        115                     120                     125
Leu Val Lys Met Trp Glu Asp Glu Val Lys Asp Tyr Asn Pro Lys Lys
    130                     135                     140
Lys Phe Ser Gly Asn Asp Phe Leu Lys Thr Gly His Tyr Thr Gln Met
145                     150                     155                     160
Val Trp Ala Asn Thr Lys Glu Val Gly Cys Gly Ser Ile Lys Tyr Ile
            165                     170                     175
Gln Glu Lys Trp His Lys His Tyr Leu Val Cys Asn Tyr Gly Pro Ser
            180                     185                     190
Gly Asn Phe Lys Asn Glu Glu Leu Tyr Gln Thr Lys
            195                     200
```

<210> 40
<211> 38
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 40
ccgctcgaga aagaaacaa ttattgtaaa ataaaatg   38